Berlin Mathematical School

BMS Friday Colloquium

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Rahul Pandharipande (*ETH Zürich*)

Cohomology of the Moduli Space of Curves

The moduli space of curves (or Riemann surfaces of dimension 1) has been studied by geometers and topologists since Riemann's papers in the late 19th century. More recently, the subject has had significant interaction with mathematical physics. While a lot is known about the geometry of the moduli space, many important questions remain open.

The moduli space of curves carries cohomology classes obtained by basic geometric constructions. The first relation amongst these tautological classes is obtained from the cross ratio in complex analysis. In his talk, Pandharipande will discuss the study of further relations starting with ideas of Mumford in 1980s. The subject advanced in the 1990s with conjectures of Faber and Faber–Zagier. Pandharipande will explain the current state of affairs based on Pixton's conjectures related to cohomological field theories. His talk represents joint work with A. Pixton and D. Zvonkine.

Rahul Pandharipande is an Indian-American mathematician at the Swiss Federal Institute of Technology Zürich (ETH). His interests include the moduli of curves, Gromov–Witten theory, and the moduli of sheaves. He received his PhD from Harvard in 1994 and, between 1994 and 2002, he taught at the University of Chicago and the California Institute of Technology. Pandharipande joined Princeton in 2002 as professor of mathematics before accepting a professorship at ETH Zürich in 2011. In 2013, he received the Infosys Prize for Mathematics and the Clay Research Award.

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